

# PATENT SPECIFICATION

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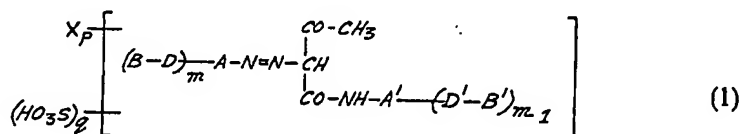
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## (54) WATER-SOLUBLE, REACTIVE AZO DYES, PROCESS FOR THEIR PREPARATION AND THEIR USE

(71) We, HOECHST AKTIENGESellschaft, a body corporate organised according to the laws of the Federal Republic of Germany, of 6230 Frankfurt/Main 80, Postfach 80 03 20, Federal Republic of Germany, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention provides water-soluble, yellow reactive dyestuffs which, in the form of the free acid, correspond to the general formula (1)

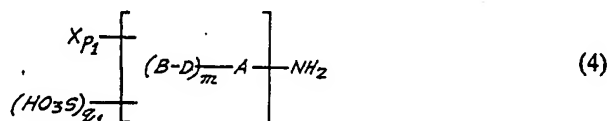


in which A, A', B and B', which may be the same or different, each represents a radical of the benzene, naphthalene, or aromatic heterocyclic series, D represents a direct bond, an —S— atom or a —CH<sub>2</sub>—, —NH—, —N=N—, —CO—, —CH=CH—, —SO<sub>2</sub>— or —NH—SO<sub>2</sub>— group, preferably a direct bond or a —CH<sub>2</sub>—, —NH—, —N=N—, —SO<sub>2</sub>— or —NH—SO<sub>2</sub>— group, D' represents a direct bond, an —S— atom or a —CH<sub>2</sub>—, —NH—, —CO—, —CH=CH—, —SO<sub>2</sub>— or —NH—SO<sub>2</sub>— group, preferably a —CH=CH— or —NH— group, p is 1 or 2, X, or each X, which may be the same or different, represents a group of the formula (2) or (3)



where Y represents a hydroxyl group or a radical which can be split off by an alkaline agent, one of m and m<sub>1</sub> is 1 and the other is 0 or 1, and q is 1, 2 or 3, a group X or —SO<sub>3</sub>H being linked to A, A', B or B', and with the proviso that A' represents a radical of the naphthalene series when (B-D)<sub>m</sub>-A— represents a substituted or unsubstituted p-(2-benzthiazolyl)-phenyl group.

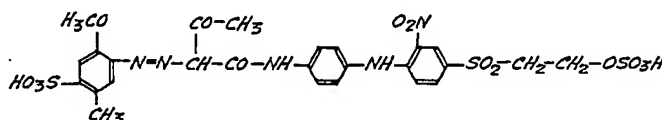
The present invention also provides a process for the preparation of a dyestuff which, in the form of the free acid, corresponds to the above general formula (1), which comprises diazotizing an amine of the general formula (4)



3-nitro-4-aminobenzophenone-2'-carboxylic acid, a dyestuff was obtained having similar clear shades and similar good fastness properties.

#### EXAMPLE 5:

21.7 Parts of 1-amino-2-methoxy-5-methylbenzene-4-sulphonic acid were diazotized in the usual manner. To the so obtained diazonium salt solution 48.7 parts of 4-acetoacetyl-amino-2'-nitrodiphenylamine-4'-β-hydroxyethyl-sulphone-sulphuric acid ester were added. By the introduction of sodium carbonate the coupling mixture became weakly acid to neutral and was stirred until the coupling process was completed. By adding potassium chloride the dyestuff precipitated; it was separated by filtration and dried at 50°C—60°C in a vacuum drier. The yellow dyestuff powder obtained dissolved in water to give a yellow solution, and corresponded to the formula

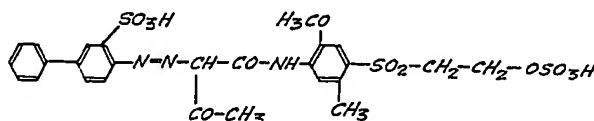


The dyestuff gave clear yellow prints and dyeings having good fastness to wet processing and to light.

When using, instead of the 4-acetoacetyl-amino-2'-nitrodiphenylamine-4'-β-hydroxyethyl-sulphone-sulphuric acid ester, 4-acetoacetyl-amino-4'-nitrodiphenylamine-2'-β-hydroxyethylsulphone-sulphuric acid ester, a dyestuff possessing similar good shade and properties was obtained.

#### EXAMPLE 6:

24.9 Parts of 4-aminodiphenyl-3-sulphonic acid were diazotized in the usual manner. To the diazonium salt solution 187.5 parts of a 20% solution of 1-acetoacetyl-amino-2-methoxy-5-methylbenzene-4-β-hydroxyethylsulphone-sulphuric acid ester in water were added; by the introduction of sodium acetate the pH value was adjusted to 4. The coupling process was completed after a short time. For the isolation of the dyestuff a solution of potassium chloride was added, the precipitated dyestuff separated by filtration and dried at 50°C—60°C in a vacuum drier. A yellow powder was obtained which dissolved in water to give a yellow solution. In the form of free acid, the dyestuff had the following formula



The dyestuff yielded on cellulosic fibres, in the presence of an alkaline agent, greenish-yellow dyeings and prints with very good fastness to washing and rubbing.

#### EXAMPLE 7:

29.0 Parts of 1-phenyl-6-amino-benzotriazol-4'-sulphonic acid were diazotized in the usual manner. To the diazonium salt solution 187.5 parts of a 20% aqueous solution of 1-acetyl-amino-2-methoxy-5-methylbenzene-4-β-hydroxyethylsulpho-nesulphuric acid ester were added; by adding crystallized sodium acetate the pH value was adjusted to 4. The dyestuff formation was completed after stirring for about one hour. Potassium chloride was added to the dyestuff solution, the precipitated dyestuff was filtered off and dried at 50°C—60°C in a vacuum drier. A yellow powder was obtained which dissolved in water giving a yellow solution. In the form of free acid, the dyestuff had the following formula

